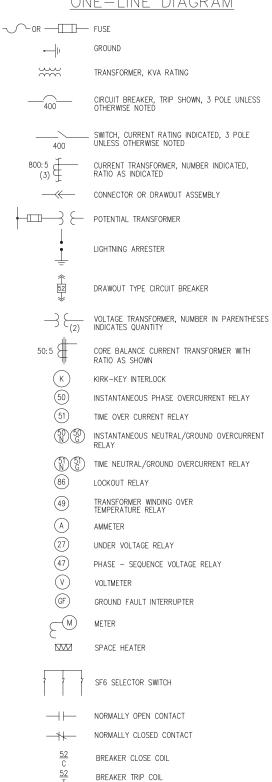
APPENDIX N AVAILABLE DRAWINGS OF ELECTRICAL DREDGE SUBSTATION

ONE-LINE DIAGRAM



ONE-LINE <u>DIAGRAM - CONT'D.</u>

CONTROL RELAY LOCKOUT COIL

	CLOSED WHEN BREAKER IS CLOSED	
b	AUXILIARY CONTACT, OPEN WHEN BREAKER IS CLOSED	
<u>LS</u> a	LIMIT SWITCH CONTACT, OPEN WHEN SPRINGS ARE DISCHARGED, CLOSED WHEN SPRINGS ARE CHARGED	
<u>LS</u> b	LIMIT SWITCH CONTACT, CLOSED WHEN SPRINGS ARE DISCHARGED, OPEN WHEN SPRINGS ARE CHARGED	
<u>POWER</u>		
•	3/4"ø X 10'-0" LONG COPPER CLAD GROUND ROD	

AUXILIARY CONTACT,

\circ	D O E E M O
△ WP	100A, 480V, 3 POLE, 4 WIRE WEATHER PROOF RECEPTACLE
Δ	TELEPHONE OUTLET
0	FIBER OPTIC OUTLET

GFCI	20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE GFCI AND WEATHER PROOF RECEPTACLE
	480V REEFER OUTLET ASSEMBLY (ROA)

480V REEFER PANEL

BOLL ARD

TELEPHONE

	TELEPHONE VERTICAL BEND
T	TELEPHONE MANHOLE
TEL	TELEPHONE PANELBOX
○ TP	TELEPHONE POLE

JUNCTION BOX

ELECTRICAL

☐ JB0X

ELEC. METER PANEL	ELECTRICAL METER PANEL
ELEC. PAD	ELECTRICAL PAD
₩ LP	LIGHT POLE OR STREET LIGHT
O PP	POWER POLE
RISER	RISER
T	STUB OUT
O METER	METER

GUY POLE

○ GP	
E	

ELECTRICAL MANHOLE



PANELBOX TRAFFIC PANELBOX



RR SIGNAL POLE TRAFFIC LIGHT POLE

□РВ

PULLB0X

CONDUIT AND RACEWAY

	UNDERGROUND DUCTBANK
	600V AND BELOW DUCT BANK UNDERGROUND
—— G ——	GROUND CONDUCTOR, SIZE AS NOTED ON PLANS
	RACEWAY TURNED UP OR TOWARDS VIEWER
•	RACEWAY TURNED DOWN OR AWAY FROM VIEWER
	RACEWAY CAPPED, PROVIDE AND INSTALL MARKER AT GRADE
—-G——-G—	EXOTHERMIC WELD CONNECTION
—— Р ——	ELEC. DUCT
—	TELECOMMUNICATION/COMMUNICATION DUCT
	EXISTING
	NEW
(20A3)	FEEDER NUMBER CALLOUT

MANHOLE/PULL BOX IDENTIFICATION

MHXX	INDICATES MEDIUM VOLTAGE MANHOLE.
MPXX	INDICATES 600V AND BELOW MANHOLE/PULLBOX.
MCXX	INDICATES COMMUNICATION, CCTV, FIBER OPTIC AND SECURITY MANHOLE/PULLBOX.

MARKERS STD. SHAPES (BALLOONS)

1417 (1 (1	CENO OID: OII/ (I E
000	ROUND - CONSTRUCTION NOTES
000	HEXAGON - CURVE OR LINE DATA
000	SQUARE - DEMOLITION NOTES
000	DIAMOND - REFERENCE NOTES

REEFER DUCTBANK SET

000	(DB149) = DUCT BANK NUMBER DB149	SEE DWG E37 FOR DUCTBANK SECTION
-----	----------------------------------	----------------------------------

TRIANGLE (DELTA) - RESERVED FOR DRAWING REVISIONS ONLY

REFERENCE SYMBOLS



NUMBER OF DETAIL REFERENCED CONSECUTIVELY ON EACH SHEET.

CONSECUTIVELY ON EACH SHEET.

EY - DRAWING NUMBER WHERE SECTION

EX - DRAWING NUMBER WHERE DETAIL ORIGINATED. EY - DRAWING NUMBER WHERE DETAIL

IS DRAWN.

ORIGINATED.

IS DRAWN.



-NUMBER OF SECTION REFERENCED EX - DRAWING NUMBER WHERE SECTION

ELECTRICAL ABBREVIATIONS

A	AMMETER, AMPERE
ABAN AF	ABANDONED AMPERE FRAME
AFG	ABOVE FINISHED GRADE
AT	AMPERE TRIP
BFG C	BELOW FINISHED GRADE CONDUIT, CLOSE
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF CO	CURRENT LIMITING FUSE CONDUIT ONLY
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR CRS	CONTROL RELAY PVC COATED RIGID STEEL CONDUIT
CS	CONTROL SWITCH
CSS	CRANE SUBSTATION
CSS1-M1	MAIN BREAKER (NUMBER) AT CRANE SUBSTATION (NUMBER)
CSS1-T1/2 CSS1-F1	TIE BREAKER (NUMBER) AT CRANE SUBSTATION (NUMBER) FEEDER (NUMBER) AT CRANE SUBSTATION (NUMBER)
CT	CURRENT TRANSFORMER
CU	COPPER
DIA	DIAMETER
DN DWG	DOWN DRAWING
(E)	EXISTING
ÉLÉC	ELECTRICAL
ELEV EMT	ELEVATION ELECTRICAL METALLIC TUBING
F,FU	FUSE
FDR	FEEDER
G,GND,GRD GA	GROUND GAUGE
GRS	GALVANIZED RIGID STEEL
GTE	GENERAL TELEPHONE AND ELECTRONICS
J,JB KVA	JUNCTION BOX KILOVOLT AMPERE(S)
KOVAR	KILOVAR(S)
KW	KILOWATŤ(Ś) LIGHTING POLE
LP LV	LIGHTING POLE LOW VOLTAGE
MTS	MAIN TERMINAL SUBSTATION
MTS-F1	FEEDER (NUMBER) AT MTS
MTS-M1 MTS-T1	MAIN BRÉAKER (NUMBER) AT MTS TIE BREAKER (NUMBER) AT MTS
MV	MEDIUM VOLTAGE
(N)	NEW
NEUT NIC	NEUTRAL NOT IN CONTRACT
NC	NORMALLY CLOSED
NO OD	NORMALLY OPEN OUTSIDE DIAMETER
OLTC	ON LINE TAP CHANGER
P,PNL	PANEL
PH,Ø	PHASE
POLB PQM	PORT OF LONG BEACH POWER QUALITY MONITOR
PVC	POLYVINYL CHLORIDE
PTW	POWER, TELEPHONE, AND WATER
RECEPT RGS	RECEPTACLE RIDGID GALVINIZED STEEL
SS	STAINLESS STEEL
SCE	SOUTHERN CALIFORNIA EDISON
SP SUB	SEWER PIT SUBSTATION
ŠW SWBD	SWITCH
SWGR	SWITCHBOARD SWITCHGEAR
SYM	SYMMETRICAL
T	TRIP
TDB TYP	TO BE DETERMINED TYPICAL
UG	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
V VFI	VOLTMETER, VOLT VACUUM FAULT INTERRUPTER
VP	VAPORPROOF
VT	VOLTAGE TRANSFORMER
WP	WEATHERPROOF
W/ W/O	WITH WITH OUT
XFMR	TRANSFORMER
ΛΓΜΙΚ Ω	OHMS

AS-BUILT CONDITIONS ILLUSTRATED ON THESE PLANS REFLECT INFORMATION PROVIDED BY THE CONTRACTOR AND THE PIER T CONSTRUCTION MANAGER AND DRAFTED BY P2S.

P2S DID NOT VERIFY THE AS-BUILT CONDITIONS AND DOES NOT WARRANTY THE ACCURACY THEREOF.

400 Oceangate, Suite 320 Consulting Engineers Long Beach, CA 90802 (562) 437-9100 Fax: (562) 437-9200

FN: D1903E01

DRAWN ____ J.G.U. ___ DATE ____ 03/06_ ASS'T CHIEF HARBOR ENGR. P.E. NO. C-25677 DATE DESIGNED___C.J.C.___P.E. NO._____ PROJ. MGR. A.S. P.E. NO. ____ SECT. HEAD D.J.S. P.E. NO. C-46837 CHIEF HARBOR ENGINEER P.E. NO. C-43065 DATE

MICROPROCESSOR RELAY

MPR



PIER T MARINE TERMINAL PHASE 3 CONTAINER YARD EXPANSION LEGEND AND ABBREVIATIONS

AS SHOWN SHEET 96 OF 150 SPECIFICATION HD-S2281 DRAWING HD 10-1903-E1

GENERAL NOTES

- FURNISH AND INSTALL ALL CONDUITS, WIRES, BOXES, SWITCHES, LIGHT FIXTURES (WITH LAMPS), POLE FOUNDATIONS, RECEPTACLES, DEVICES, PANELBOARDS AND OTHER EQUIPMENT SHOWN ON THE DRAWINGS AND AS REQUIRED FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.
- 2. ALL WORK SHALL COMPLY WITH THE 2004 EDITION OF THE CALIFORNIA ELECTRICAL CODE AND ALL OTHER APPLICABLE FEDERAL, STATE NATIONAL AND LOCAL CODES. WHERE THE PLANS SHOW MORE RESTRICTIVE REQUIREMENTS, THE PLANS SHALL GOVERN. BUT NOTHING ON THESE PLANS SHALL BE INTERPRETED AS AUTHORITY TO WOLATE ANY CODE OR REGULATION. WHEN REFERENCES ARE MADE TO SPECIFIC CODE SECTIONS, STANDARDS, GUIDE AND OTHER SIMILAR REFERENCES, THEY ARE INTENDED TO ADD EMPHASIS TO THE REQUIREMENTS OF THAT PARTICULAR REFERENCE, AND ARE NOT INTENDED IN ANY WAY TO RELIEVE THE CONTRACTOR OF THE REMAINING REFERENCES.
- 3. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS AND/OR SPECIFICATIONS OR WITH CODE REQUIREMENTS, THE NOTE, SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR THE HIGHER STANDARD SHALL PREVAIL.
- 4. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND ALL FEES. UNLESS OTHERWISE NOTED
- 5. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, FITTINGS, JUNCTION BOXES, PULL BOXES AND EXPANSION FITTINGS REQUIRED TO MEET FIELD CONDITIONS. DETERMINE ACTUAL MATERIAL AND HARDWARE REQUIREMENTS AND VERIFY ALL DIMENSIONS EXISTING EQUIPMENT AND STRUCTURAL MEMBER LOCATIONS BY FIELD INSPECTION.
- 6. VERIFY EXISTING SITE CONDITIONS, REQUIREMENTS AND EXACT LOCATIONS OF UTILITIES BEFORE SUBMITTING BID.
- 7. SUBMIT SHOP DRAWINGS AND CATALOG CUTS FOR ALL SWITCHBOARDS, PANELBOARDS, PULL BOXES TRANSFORMERS, LIGHT FIXTURES AND POLES IN ACCORDANCE WITH THE SPECIFICATIONS.
- 8. PROVIDE A SET OF AS-BUILT DRAWINGS SHOWING THE LOCATIONS OF ALL UNDERGROUND CONDUITS AND INDICATING ALL CHANGES MADE DURING CONSTRUCTION AND ANY DEVIATIONS FROM THE ELECTRICAL DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL MATERIALS AND EQUIPMENT SHALL BE U.L. LISTED AND LABELED AND SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SYMMETRICAL SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED.
- 11. UNLESS OTHERWISE NOTED ALL DEVICES AND EQUIPMENT INSTALLED OUTSIDE OR IN DAMP LOCATIONS SHALL BE WEATHERPROOF WITH MARINE GRADE, CORROSION RESISTANT FINISH. THE FINISH FOR OUTDOOR, WEATHERPROOF, NEMA 3R ENCLOSURES, SHALL HAVE ALL COVERS AND DOORS THOROUGHLY CLEANED USING A PHOSPHATE WASH. APPLY A ZINC RICH CORROSION RESISTANT PRIMER AND THEN A POLYESTER POWDER COAT SUITABLE FOR MARINE ENVIRONMENT. EXTERIOR SURFACES SHALL BE GIVEN A FINAL FINISH COAT ON ANSI 61 LIGHT GREY AIR—DRIED ACRYLIC ENAMEL, COVERED WITH A CLEAR POLYURETHANE TOP COAT.
- 12. PROVIDE TYPEWRITTEN DIRECTORY CARD IN EACH PANEL. IDENTIFY LOAD SERVED BY EACH CIRCUIT BREAKER. PROVIDE LAMINATED PLASTIC NAMEPLATES TO IDENTIFY ALL LOADS SERVED BY SWITCHGEAR AND DISTRIBUTION PANELS. IN ADDITION TO CODE REQUIRED NAMEPLATES, CONTRACTOR SHALL PROVIDE PORT OF LONG BEACH IDENTIFYING NAMEPLATE INFORMATION, PRINTED ON AN APPROPRIATE SURFACE AND SHALL BE INSTALLED INSIDE THE SWITCHBOARD/PANELBOARD WITH THE FOLLOWING INFORMATION:

PORT OF LONG BEACH
PANEL xxxxx (NAME OF PANELBOARD)
HD-S2281

HD 10-1903
CONTACT MANUFACTURER: (NAME OF PERSON MOST FAMILIAR BY MANUFACTURER, AND TELEPHONE NUMBER)
DATE: xx/xx/xx (CONTRACTOR'S NOTICE TO PROCEED DATE)

- 13. FURNISH AND INSTALL TEMPORARY POWER AND LIGHTING REQUIRED FOR CONSTRUCTION
- 14. MAKE POWER CONNECTIONS TO AND EQUIPMENT FURNISHED BY OTHERS. PROVIDE SUPPORT FOR ALL ELECTRICAL EQUIPMENT TO COMPLY WITH THE SEISMIC REQUIREMENTS OF THE UNIFORM BUILDING CODE AND ALL LOCAL ORDINANCES.
- 15. INSTALL ALL CONDUITS AND WIRES WITH A MINIMUM NUMBER OF BENDS AND IN SUCH A MANNER AS TO CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEAD ROOM KEEP OPENINGS AND PASSAGEWAYS CLEAR AND MEET ALL STRUCTURAL CODE REQUIREMENTS.
- 16. DO NOT BORE, NOTCH OR IN ANY WAY CUT INTO ANY STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.
- 17. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND THE SERVING UTILITY.
- 18. THE ENTIRE WIRING SYSTEM SHALL BE TESTED FOR CONTINUITY AND INSULATION RESISTANCE.
- 19. TEST THE ELECTRICAL INSTALLATION IN ACCORDANCE WITH THE SPECIFICATIONS.
- 20. NEC 2002 ARTICLE 110.16 REQUIRES FLASH PROTECTION. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ARC FLASH CALCULATIONS IN ACCORDANCE WITH IEEE STD. 1584, STAMPED AND SIGNED BY A LICENSED ELECTRICAL ENGINEER IN THE STATE OF CALIFORNIA. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE LABELS FOR ARC FLASH AND SHOCK HAZARD, ATTACHED TO EACH EQUIPMENT, IN ACCORDANCE WITH THE CODE.
- 21. CONDUIT THAT IS TO BE ABANDONED SHALL HAVE WIRES REMOVED. THE CONDUIT ENDS SHALL BE REMOVED. THE CONDUIT ENDS SHALL BE REMOVED TO A DEPTH OF AT LEAST 30" BELOW THE FINISHED SURFACE. BOTH ENDS OF ABANDONED CONDUITS SHALL BE CAPPED WITH CONCRETE.
- 22. CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM TESTING OF THE GROUND-FAULT PROTECTION SYSTEM AFTER INSTALLED ON SITE, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE SECTION 230.95(C). A WRITTEN RECORD OF THIS TEST SHALL BE MADE AND SHALL BE SUBMITTED TO ENGINEER.
- 23. WHEN REFERENCES ARE MADE TO SPECIFIC CODE SECTIONS, STANDARDS, GUIDELINES AND OTHER SIMILAR REFERENCES, THEY ARE INTENDED TO ADD EMPHASIS TO THE REQUIREMENTS OF THAT PARTICULAR REFERENCE, AND IS NOT INTENDED IN ANY WAY TO RELIEVE THE CONTRACTOR OF THE REMAINING APPLICABLE REFERENCES.
- 24. CONTRACTOR SHALL SUBMIT SHORT CIRCUIT AND COORDINATION STUDY ON THE ELECTRICAL SYSTEM.
- 25. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE CONCRETE PAD FOR ALL ELECTRICAL EQUIPMENT.
 EQUIPMENT CONCRETE PAD SHALL BE SIZED BY A LICENSED STRUCTURAL ENGINEER IN THE STATE OF
 CALIFORNIA. FINAL DIMENSIONS SHALL BE BASED ON APPROVED EQUIPMENT.

REFERENCE DRAWINGS:

HD 10-1640 PIER T MARINE TERMINAL BERTHS T132 - T134 UTILITIES

& CONTAINER YARD (HD-S2110)

HD 10-1439 PIER T MARINE TERMINAL
BERTHS T134 - T140 CONTAINER
YARD & INTERMODAL YARD (HD-S1983)

Project: Pier T Phase 3 Container Yard
Location: POLB Pier T Terminal

 Contract:
 HD-S2281

 Engineer:
 Name of Engineer
 Study Case:
 \$C

 Filename:
 ArchFlash
 \$C

Date: 02-20-2006
SN: P2S-ENGIN
Revision: Base
Config.: Normal

Page:

Arc Fault at Bus: Bus5
Bolted Fault Current: 1/2 Cycle

Nominal kV = 0.480 Prefaut Voltage = 100% of nominal bus kV
Base kV = 0.480 = 100% of base kV

System Grounding = Grounded

Total Arcing Fault Current = 24.036 kA FCT = 0.100 Seconds Total Bolted Fault Current = 39.761 kA = 6.000 Cycles

Working Distance = 18.00 inch Hazard/Risk Category* = 3
Incident Energy = 9.22 Cal/cm² Flash Protection Boundary = 4.16 ft

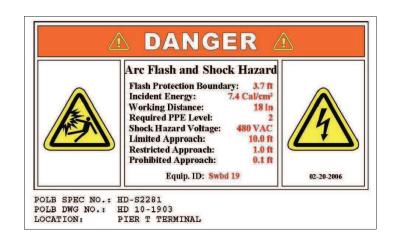
 Device
 Individual Contribution
 Section (Cycles)
 Incident Energy
 Incident Energy
 FFB
 Hazard/Risk (Cycles)
 FCT (Cycles)
 Protective Device ID for FCT
 Incident (Cycler)
 FPB
 Hazard/Risk (Cycles)
 Category

 CB3
 LV CB
 0.624
 0.327
 24.036
 6.0
 9.219
 4.2
 3

NOTES:

- THIS IS A SAMPLE REPORT, SHOWING THE MINIMUM DATA AS A RESULT OF ARC FLASH CALCULATIONS IN ACCORDANCE WITH IEEE STD. 1584.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE THIS DATA AND SUPPORTING CALCULATIONS, PRIOR TO SUBMITTING LABELS FOR ARC FLASH WARNING.





NOTES:

- 1. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE LABELS, COMPLETE WITH DATA BASED AND SUPPORTED BY CALCULATIONS, AND MOUNT TO APPRORIATE EQUIPMENT.
- 2. SUBMIT PROPOSED LABELS TO THE CITY AND OBTAIN APPROVAL OF THE CITY, PRIOR TO RELEASING ORDER TO LABEL MANUFACTURER.



FN: D1903E02

P2S ENGINEERING

kpff

Consulting Engineers

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PIER T MARINE TERMINAL PHASE 3 CONTAINER YARD EXPANSION

GENERAL NOTES

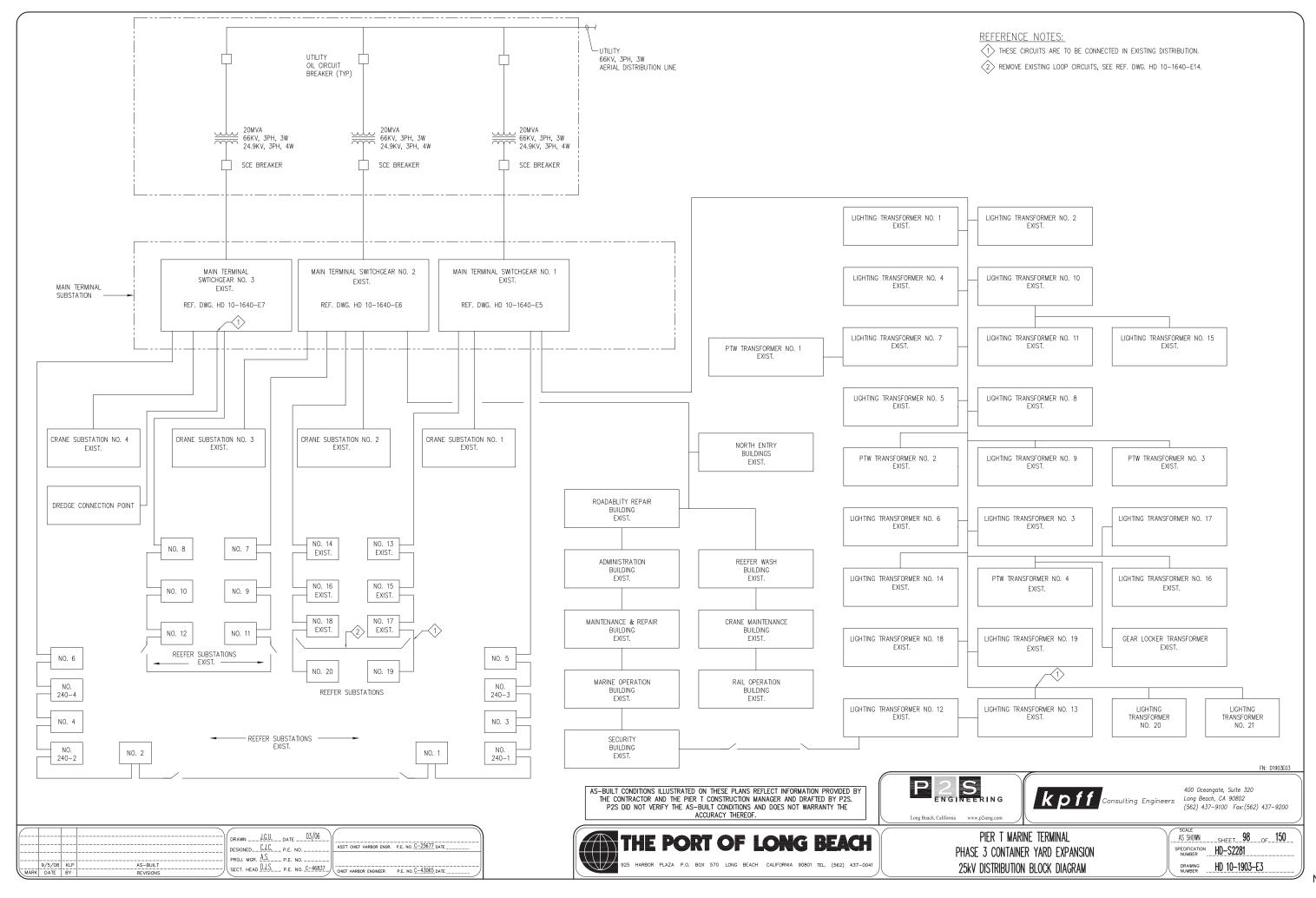
SCALE
AS SHOWN SHEET 97 OF 150
SPECIFICATION HD-S2281
DRAWING HD 10-1903-E2

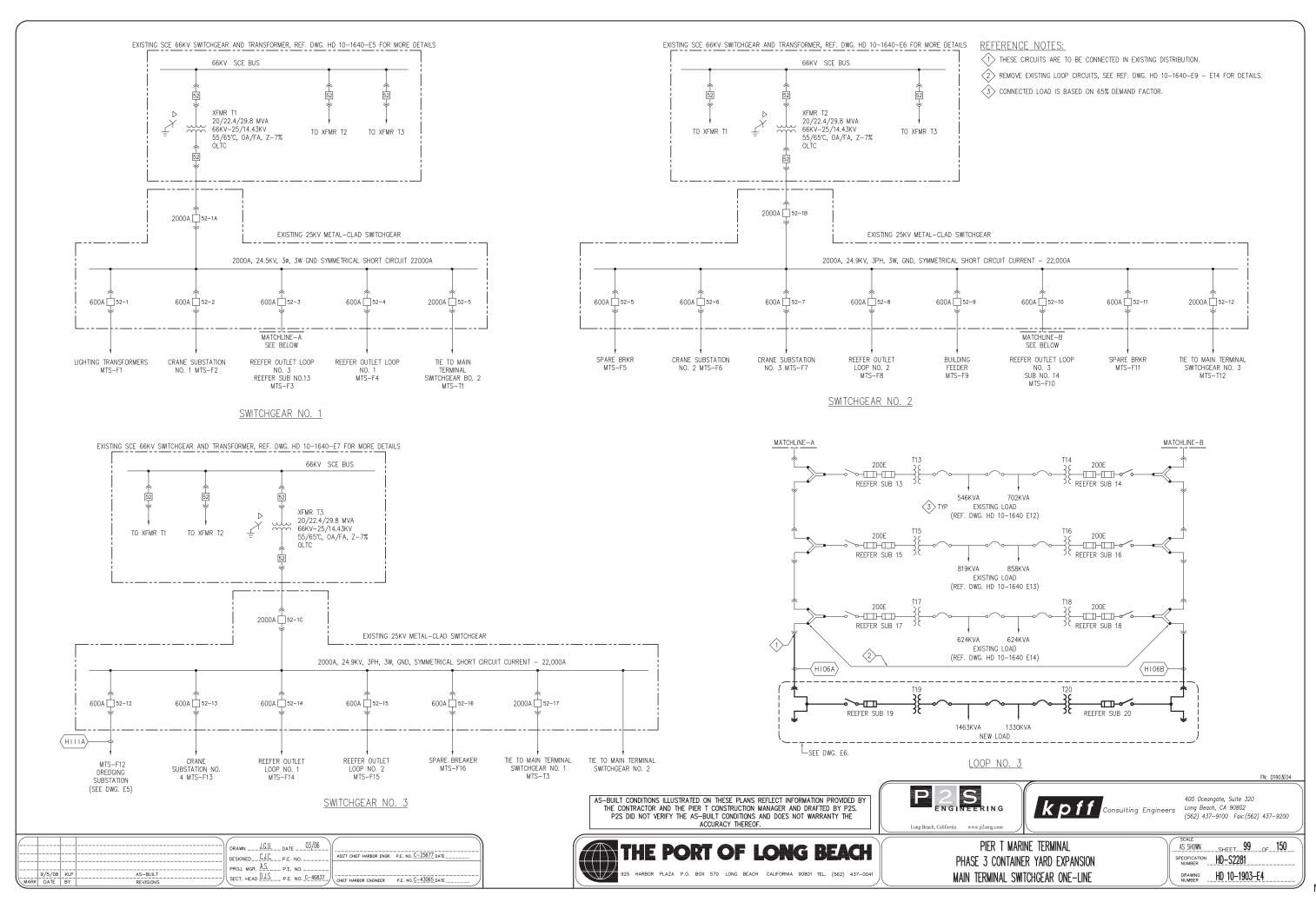
AS-BUILT CONDITIONS ILLUSTRATED ON THESE PLANS REFLECT INFORMATION PROVIDED BY THE CONTRACTOR AND THE PIER T CONSTRUCTION MANAGER AND DRAFTED BY P2S.

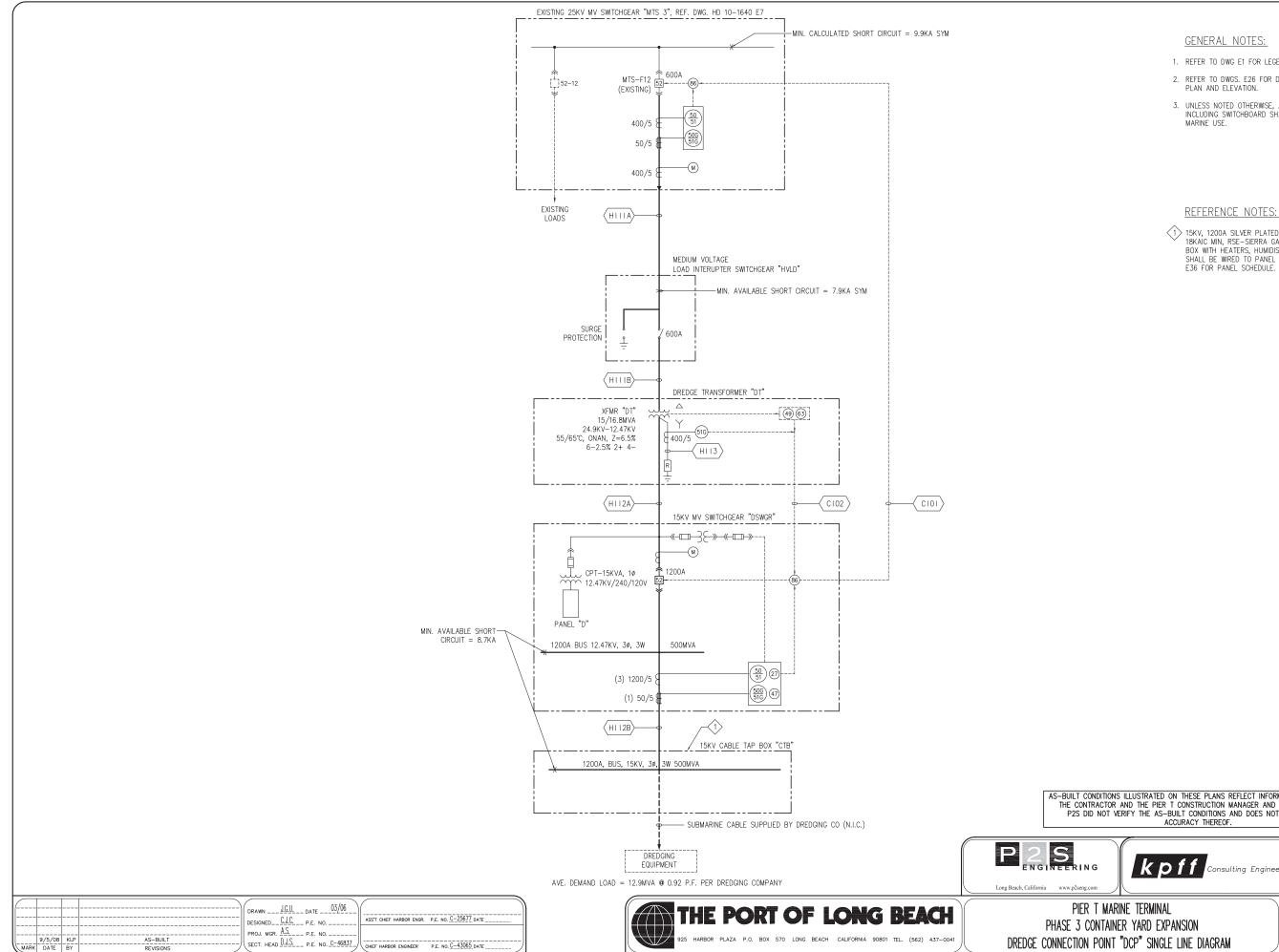
P2S DID NOT VERIFY THE AS-BUILT CONDITIONS AND DOES NOT WARRANTY THE ACCURACY THEREOF.











- 1. REFER TO DWG E1 FOR LEGEND AND ABBREVIATIONS.
- 2. REFER TO DWGS. E26 FOR DREDGE CONNECTION POINT
- 3. UNLESS NOTED OTHERWISE, ALL EQUIPMENT AND DEVICES INCLUDING SWITCHBOARD SHALL BE RATED FOR OUTDOOR MARINE USE.

15KV, 1200A SILVER PLATED COPPER, 30, 3W & GND, 18KAIC MIN, RSE-SIERRA GASKETED NEMA 3R CABLE TAP BOX WITH HEATERS, HUMIDISTAT AND THERMOSTAT AND SHALL BE WIRED TO PANEL D, CKT. #2, REFER TO DWG. E36 FOR PANEL SCHEDULE.

AS-BUILT CONDITIONS ILLUSTRATED ON THESE PLANS REFLECT INFORMATION PROVIDED BY THE CONTRACTOR AND THE PIER T CONSTRUCTION MANAGER AND DRAFTED BY P2S.

P2S DID NOT VERIFY THE AS-BUILT CONDITIONS AND DOES NOT WARRANTY THE

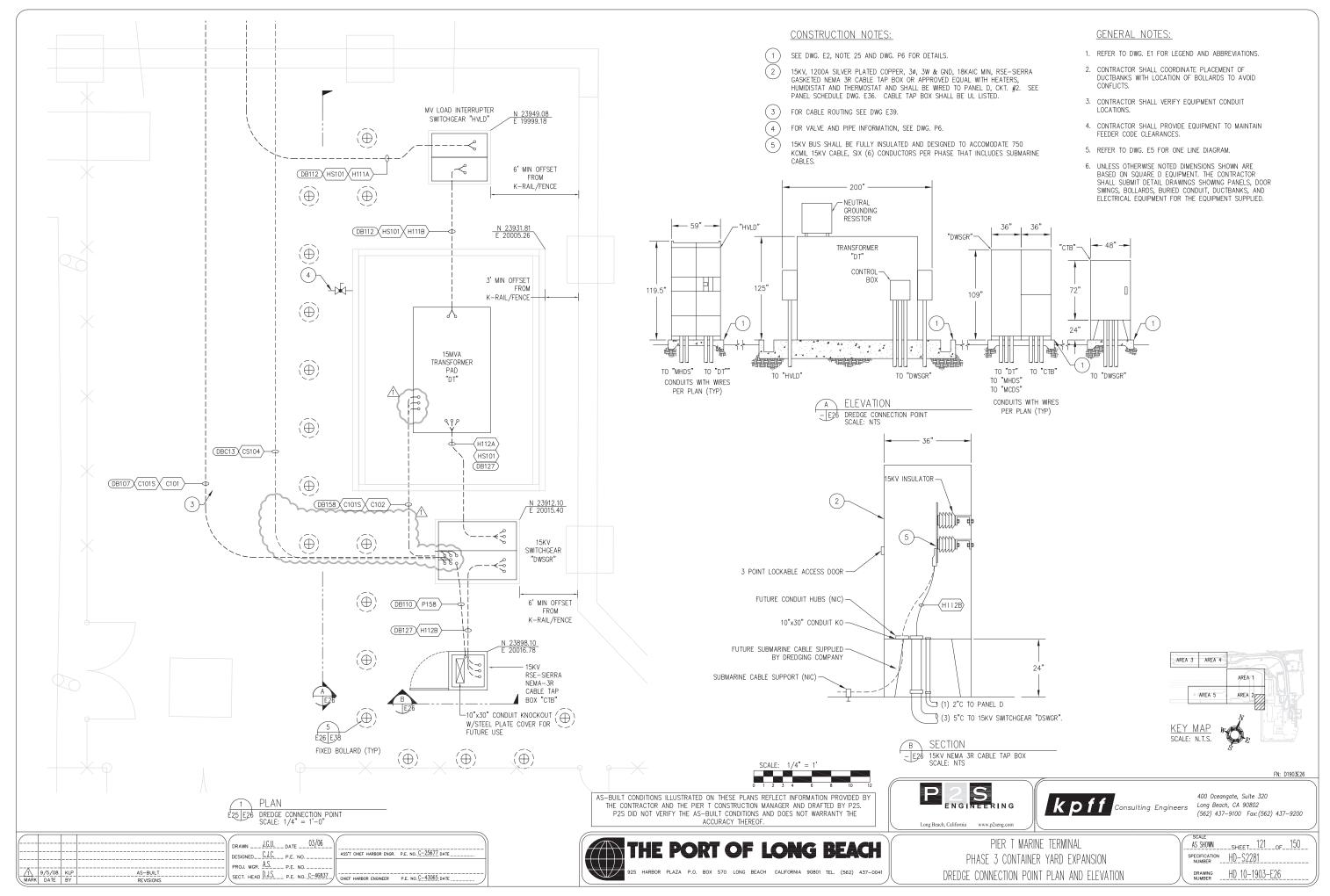
ACCURACY THEREOF.

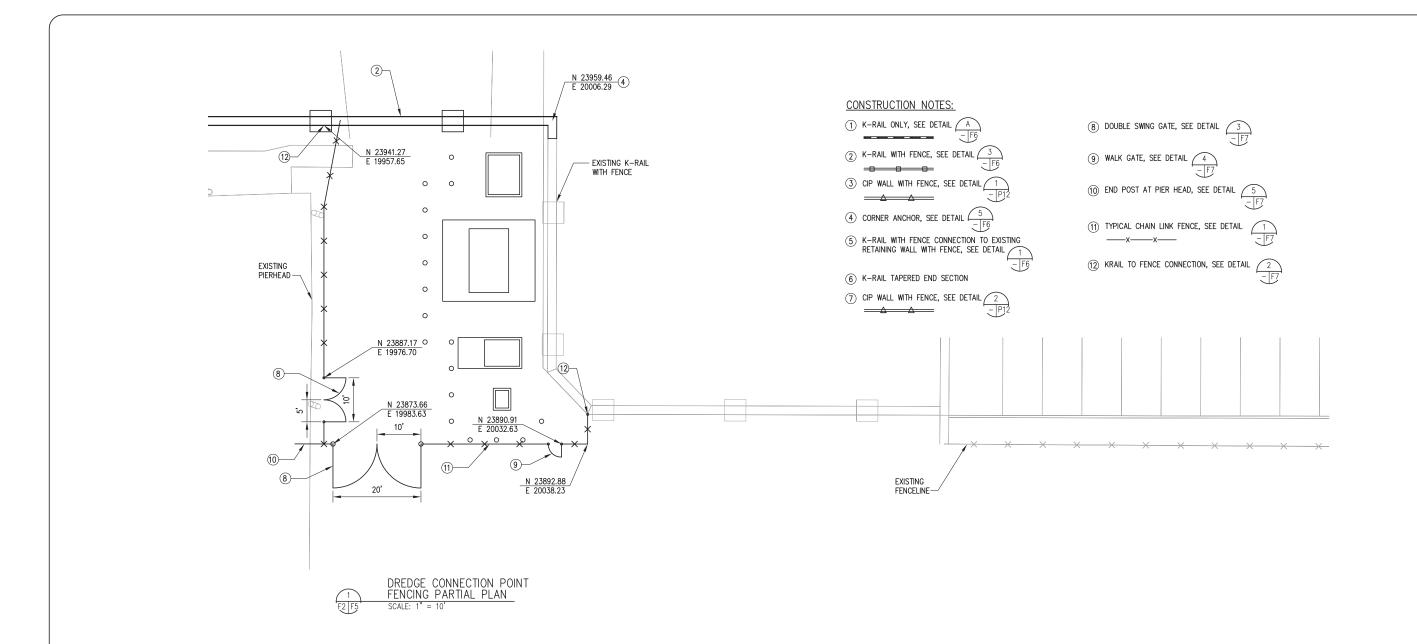
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DREDGE CONNECTION POINT "DCP" SINGLE LINE DIAGRAM

AS SHOWN SHEET 100 OF 150 SPECIFICATION HD-S2281 DRAWING HD 10-1903-E5

FN: D1903E05





AS-BUILT CONDITIONS ILLUSTRATED ON THESE PLANS REFLECT INFORMATION PROVIDED BY THE CONTRACTOR AND THE PIER T CONSTRUCTION MANAGER AND DRAFTED BY KPFF. KPFF DID NOT VERIFY THE AS-BUILT CONDITIONS AND DOES NOT WARRANTY THE ACCURACY THEREOF.



400 Oceangate, Suite 320 Long Beach, CA 90802 (562) 437-9100 Fax (562) 437-9200



PIER T MARINE TERMINAL
PHASE 3 CONTAINER YARD EXPANSION
FENCING FOR DREDGE CONNECTION POINT

AS SHOWN SHEET 92 OF 150

SPECIFICATION HD—S2281

DRAWING HD 10—1903—F5

NUMBER